CLAIMS

1. A stent comprising:

a plurality of first loop containing sections arranged generally in a circumferential direction and spaced apart from one another, loops in said first loop containing sections occurring at a first frequency;

a plurality of second loop containing sections, loops in said second loop containing sections occurring at a second frequency that is higher than said first frequency, said second loop containing sections consecutively alternating with said first loop containing sections along a longitudinal axis of the stent, said sections being alternately joined to longitudinally neighboring sections at every third loop of each of said second loop containing sections around the circumference of the stent, and wherein said first loop containing sections provide radial support upon expansion of the stent and said second loop containing sections provide longitudinal flexibility of the stent.

2. The stent according to Claim 1, wherein said first loop containing sections have one cycle for every three cycles of said second loop containing sections to form at least one cell.

3. The stent according to Claim 1, wherein the alternate joining of said second loop containing sections to said longitudinally neighboring sections of said first loop containing sections is circumferentially offset.

4. The stent according to Claim 1, wherein said first loop containing sections and said second loop containing sections form a plurality of cells.

5. The stent according to Claim 4, wherein each of said cells encompass about the same area.

6. The stent according to Claim 4, wherein each of the cells is substantially symmetrical about a line parallel to said longitudinal axis of the stent.

7. The stent according to Claim 1, wherein the relative width of each of said first loop containing sections is such that when said stent is crimped for insertion into a lumen of a blood vessel, each of said second loop containing sections are crimpable to essentially the same diameter as each of said first loop containing sections.

8. The stent according to Claim 1, wherein flexibility is provided by a selected material making up the second loop containing sections.

9. The stent according to Claim 1, wherein said first loop containing sections and said second loop containing sections have struts, said first loop containing sections have wider struts than struts of said second loop containing sections.

10. The stent according to Claim 9, wherein one of the struts of the second loop containing sections is shorter than another strut of the second loop containing sections.

11. The stent according to Claim 9, wherein, while flexing, the struts of said second loop containing sections have maximal strain that is lower than an elastic limit of the stent.

12. The stent according to Claim 11, wherein said maximal strain is below approximately 0.5% of the elastic limit of the stent.

13. A stent comprising:

a plurality of first circumferential bands containing a pattern of loops at a first frequency and disposed in phase relative to one another;

a plurality of second circumferential bands containing a pattern of loops at a second frequency higher than said first frequency, said second circumferential bands consecutively alternating with said first circumferential bands along a longitudinal axis of the stent, every third loop of said second circumferential band alternately joining to neighboring bands of said first circumferential bands, and wherein said first circumferential bands are relatively adapted to provide radial support upon expansion of the stent and said second circumferential bands are relatively adapted to provide longitudinal flexibility of the stent.

14. The stent according to Claim 13, wherein each of the second circumferential bands have loops which are disposed in phase relative to one another.

15. The stent according to Claim 13, wherein the alternate joining of said second circumferential bands to said longitudinally neighboring sections of said first circumferential bands is circumferentially offset.

16. The stent according to Claim 13, wherein said first circumferential bands have one cycle for every three cycle of said second circumferential bands to form at least one cell.

17. The stent according to Claim 13, wherein said first circumferential bands and said second circumferential bands form a plurality of cells.

18. The stent according to Claim 17, wherein each of said cells encompass about the same area.

19. The stent according to Claim 17, wherein each of the cells is substantially symmetrical about a line parallel to said longitudinal axis of the stent.

20. The stent according to Claim 13, wherein the relative width said first circumferential bands is such that when said stent is crimped for insertion into a lumen of a blood vessel, said second circumferential bands are crimpable to essentially the same diameter as said first circumferential bands.

21. The stent according to Claim 13, wherein flexibility is provided by a selected material comprising the second circumferential bands.

22. The stent according to Claim 13, wherein said first circumferential bands and said second circumferential bands have struts, said first circumferential bands have wider struts than struts of said second circumferential bands.

23. The stent according to Claim 13, wherein one of the struts of the second circumferential band is shorter than another strut of the second circumferential band.

24. The stent according to Claim 13, wherein, while flexing, the struts of said second circumferential bands have maximal strain that is lower than an elastic limit of the stent.

25. The stent according to Claim 22, wherein said lower maximal strain is below approximately 0.5% of the elastic limit of the stent.

26. A stent comprising:

a plurality of radially supporting sinusoidal bands arranged generally in a circumferential direction and spaced apart from one another;

a series of flexible connectors, each having a first end and a second end, said connectors coupling neighboring radially supporting sinusoidal bands along the longitudinal axis of the stent such that said first ends and said second ends of each flexible connector are consecutively and alternately joined to each of said neighboring radially supporting sinusoidal bands around the circumference of the stent, wherein the alternate joining of said first and second ends of said flexible connectors to said longitudinally neighboring radially supporting sinusoidal bands is circumferentially offset.

27. The stent according to Claim 26, wherein one loop of said radially supporting sinusoidal bands is coupled to two flexible connectors to form a cell.

28. The stent according to Claim 26, wherein said radially supporting sinusoidal bands and said flexible connectors form a plurality of uniformly distributed cells.

29. The stent according to Claim 28, wherein each of said cells encompass about the same area.

30. The stent according to Claim 28, wherein each of the cells is substantially symmetrical about a line parallel to a longitudinal axis of the stent.

31. The stent according to Claim 26, wherein the relative width of said radially supporting sinusoidal bands is such that when said stent is crimped for insertion into a lumen of a blood vessel said flexible connectors are crimpable to essentially the same diameter as said radially supporting sinusoidal bands.

32. The stent according to Claim 26, wherein said radially supporting sinusoidal bands and said flexible connectors have struts, said radially supporting sinusoidal bands have wider struts than struts of said flexible connectors.

33. The stent according to Claim 26, wherein one of the struts of the flexible connector is shorter than another strut of the flexible connector.

34. The stent according to Claim 32, wherein while flexing, the struts of said flexible connectors have maximal strain that is lower than an elastic limit of the stent.

35. The stent according to Claim 34, wherein said maximal strain is below approximately 0.5% of the elastic limit of the stent.

36. The stent according to Claim 26, wherein said flexible connectors are generally Z-shaped segments.

37. A stent comprising:

a plurality of first circumferential bands containing a pattern of loops at a first frequency;

a plurality of second circumferential bands containing a pattern of loops at a second frequency higher than said first frequency, consecutively alternating with said first circumferential bands and periodically coupled to form cells such that said first circumferential bands are joined together through said second circumferential bands without connection directly between said first circumferential bands,

wherein the loops of the first circumferential bands are in phase with each other, each cell including one cycle of the first circumferential band and three cycles of the second circumferential band, the second circumferential band having at least one loop longitudinally shorter than another loop in the second circumferential band.

38. The stent according to Claim 37, wherein each of the second circumferential bands have loops which are disposed in phase relative to one another.

39. The stent according to Claim 37, wherein the alternate joining of said second circumferential bands to said longitudinally neighboring sections of said first circumferential bands is circumferentially offset.

40. The stent according to Claim 37, wherein said first circumferential bands and said second circumferential bands form a plurality of cells.

41. The stent according to Claim 40, wherein each of said cells encompass about the same area.

42. The stent according to Claim 40, wherein each of the cells is substantially symmetrical about a line parallel to said longitudinal axis of the stent.

43. The stent according to Claim 37, wherein the relative width of said first circumferential bands is such that when said stent is crimped for insertion into a lumen of a blood vessel, said second circumferential bands are crimpable to essentially the same diameter as said first circumferential bands.

44. The stent according to Claim 37, wherein flexibility is provided by a selected material comprising the second circumferential bands.

45. The stent according to Claim 37, wherein said first circumferential bands and said second circumferential bands have struts, said first circumferential bands have wider struts than struts of said second circumferential bands.

46. The stent according to Claim 37, wherein one of the struts of the second circumferential band is shorter than another strut of the second circumferential band.

47. The stent according to Claim 37, wherein, while flexing, the struts of said second circumferential bands have maximal strain that is lower than an elastic limit of the stent.

48. The stent according to Claim 45, wherein said lower maximal strain is below approximately 0.5% of the elastic limit of **the stent.**

49. A stent comprising a plurality of cells, each of said plurality of cells including:

a first member having a first end and a second end;

a second member having a first end and a second end;

each of said first end and said second ends of each of said first member and said second member include a curved portion, said curved portion of said first end of said first member communicating with said curved portion of said first end of said second member forming a first loop;

a third member having a first end and a second end;

a fourth member having a first end and a second end;

a fifth member having a first end and a second end;

a sixth member having a first end and a second end;

a seventh member having a first end and a second end;

an eighth member having a first end and a second end; and

said first end and said second end of each of said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member include a curved portion, said curved portion of said second end of said second member communicating with said curved portion of said first end of said third member, said curved portion of said second end of said third member communicating with said curved portion of said first end of said fourth member forming a second loop, said curved portion of said second end of said fourth member communicating with said curved portion of said first end of said fifth member forming a third loop, said curved portion of said second end of said fifth member communicating with said curved portion of said first end of said sixth member forming a fourth loop, said curved portion of said second end of said sixth member communicating with said curved portion of said first end of said seventh member forming a fifth loop, said curved portion of said second end of said seventh member communicating with said curved portion of said first end of said eighth member forming a sixth loop, said curved portion of said second end of said eighth member communicating with said curved portion of said second end of said first member.

50. The stent according to Claim 49, wherein said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member each have a substantially identical length.

51. The stent according to Claim 49, wherein said third member, said fifth member, said sixth member, and said eighth member each have a length that is substantially identical, but longer than a length of said fourth member and said seventh member.

52. The stent according to Claim 49, wherein said third member, said fourth member, said sixth member and said seventh member each have a length that is substantially identical, but shorter than a length of said fifth member and said eighth member.

53. The stent according to Claim 49, wherein said first member, said third member, said seventh member and said eighth member are substantially parallel.

54. The stent according to Claim 49, wherein said second member, said fourth member, said fifth member, and said sixth member are substantially parallel.

55. The stent according to Claim 49, wherein the connection of said third member, said fourth member, and said fifth member form an overall shape that is substantially a mirror image of an overall shape formed by the connection of said sixth member, said seventh member, and said eighth member.

56. The stent according to Claim 49, wherein the connection of said third member, said fourth member, and said fifth member form an overall shape that is substantially reversed of an overall shape formed by the connection of said sixth member, said seventh member, and said eighth member.

57. The stent according to Claim 49, wherein a substantial length of each of said first member, said second member, said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member is substantially linear.

58. The stent according to Claim 49, wherein a substantial length of each of said first member, said second member, said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member is substantially non-linear.

59. The stent according to Claim 49, wherein each of said first member and said second member have a relative width such that when said stent is crimped for insertion into a lumen of a blood vessel, each of said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member are cimpable to essentially a same diameter as said first member and said second member.

60. The stent according to Claim 49, wherein flexibility is provided by the material making up said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member.

61. The stent according to Claim 49, wherein each of said first member and said second member have a width that is wider than a width of said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member.

62. The stent according to Claim 49, wherein at least one of said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member is of a length that is shorter that a length of at least one other of said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member.

63. The stent according to Claim 49, wherein, while flexing, said third member, said fourth member, said fifth member, said sixth member, said seventh member, and said eighth member have a maximal strain that is lower than an elastic limit of the stent.

64. The stent according to Claim 63, wherein said maximal strain is below approximately 0.5% of the elastic limit of the stent.

65. A stent comprising:

a plurality of first circumferential bands containing a pattern of loops at a first frequency and disposed in-phase relative to one another;

a plurality of second circumferential bands containing a pattern of loops at a second frequency higher than said first frequency, said second circumferential bands consecutively alternating with said first circumferential bands along the longitudinal axis of the stent, wherein all of the loops of the first circumferential bands are connected to adjacent second circumferential bands.

66. The stent according to Claim 65, wherein each of the second circumferential bands have loops which are disposed in phase relative to one another.

67. The stent according to Claim 65, wherein said first circumferential bands have one cycle for every three cycle of said second circumferential bands to form at least one cell.

68. The stent according to Claim 65, wherein said first circumferential bands and said second circumferential bands form a plurality of cells.

69. The stent according to Claim 68, wherein each of said cells encompass about the same area.

70. The stent according to Claim 68, wherein each of the cells is substantially symmetrical about a line parallel to said longitudinal axis of the stent.

71. The stent according to Claim 65, wherein the relative width said first circumferential bands is such that when said stent is crimped for insertion into a lumen of a blood vessel, said second circumferential bands are crimpable to essentially the same diameter as said first circumferential bands.

72. The stent according to Claim 65, wherein flexibility is provided by a selected material comprising the second circumferential bands.

73. The stent according to Claim 65, wherein said first circumferential bands and said second circumferential bands have struts, said first circumferential bands have wider struts than struts of said second circumferential bands.

74. The stent according to Claim 65, wherein one of the struts of the second circumferential band is shorter than another strut of the second circumferential band.

75. A stent comprising:

a plurality of first circumferential bands containing a pattern of loops at a first frequency and disposed in-phase relative to one another;

a plurality of second circumferential bands containing a pattern of loops at a second frequency higher than said first frequency, said second circumferential bands consecutively alternating with said first circumferential bands along a longitudinal axis of the stent, wherein the loops of the second circumferential bands are alternatively shifted so that some of loops occupy space close to one neighboring first circumferential band and other loops occupy space close to the other neighboring first circumferential band.

76. The stent according to claim 75 wherein the arrangement of loops of the second circumferential bands facilitate crimpability of the stent on a balloon.

77. The stent according to claim 75, wherein some of the loops of the second circumferential bands are shifted to the right and other loops of the second circumferential bands are shifted to the left.

78. The stent according to Claim 75, wherein each of the second circumferential bands have loops which are disposed in phase relative to one another.

79. The stent according to Claim 75, wherein said first circumferential bands have one cycle for every three cycle of said second circumferential bands to form at least one cell.

80. The stent according to Claim 75, wherein said first circumferential bands and said second circumferential bands form a plurality of cells.

81. The stent according to Claim 80, wherein each of said cells encompass about the same area.

82. The stent according to Claim 80, wherein each of the cells is substantially symmetrical about a line parallel to said longitudinal axis of the stent.

83. The stent according to Claim 75, wherein the relative width said first circumferential bands is such that when said stent is crimped for insertion into a lumen of a blood vessel, said second circumferential bands are crimpable to essentially the same diameter as said first circumferential bands.

84. The stent according to Claim 75, wherein flexibility is provided by a selected material comprising the second circumferential bands.

85. The stent according to Claim 75, wherein said first circumferential bands and said second circumferential bands have struts, said first circumferential bands have wider struts than struts of said second circumferential bands.

86. The stent according to Claim 75, wherein one of the struts of the second circumferential band is shorter than another strut of the second circumferential band.